Grasses and Grasslike Plants of Cultivated Fields and Pastures in Missouri

Identification by Vegetative Characters

Manual 118 9 • 80 • 3M University of Missouri-Columbia
College of Agriculture Extension Division

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William W. Dierker

Contents

Acknowledgements 4

Introduction 5

Characters Used in Identification 5

General Information 6

Explanation of Measurements 7

Figures of Vegetative Characters 8

List of Species Included in Keys 13

Key to Families 15

Key to Sedges - Family *Cyperaceae* 16

Key to Rushes - Family *Juncaceae* 17

Key to Grasses - Family *Poaceae* 18

Description of Species 27

Sedges 27

Rushes 29

Grasses 30

Glossary 53

Literature Consulted 55

Acknowledgements

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Special appreciation is extended to Dr. David B. Dunn, Prof. of Botany and Curator of the UMC Herbarium, for his critical review of the manuscript and helpful suggestions, and for the use of the UMC Herbarium. Appreciation is also extended to Dr. Laurel E. Anderson, Prof. of Agronomy, UMC who also reviewed the manuscript.

Introduction

Grasses and grasslike plants occurring as weeds on agricultural lands are difficult to identify in their vegetative stage. Persons with pest management responsibilities often need to identify weeds prior to flowering. For example, field scouts in the Integrated Pest Management Program conduct early-season, mid-season, and late-season weed surveys in field crops.

Many grasses do not flower until the latter part of the growing season. An early-season survey is especially important to identify species that have survived a particular control strategy. If further control measures are needed one must know the weed species to select an effective control method and to achieve proper timing.

Characters Used in Identification

The keys use vegetative characters that appear to be relatively constant with a narrow range of variation for a given species. The following characters were used.

1. Growth Habit

Is it an annual or a perennial? Examine the base of the stem and/or the root system.

In spring, perennials have either an enlarged stem base or rhizomes (Fig. 15); and bunch grasses may have stem bases and leaves remaining from the previous year's growth (Fig. 10). None of the above would be present in an annual plant.

One confusing point is that annual seedlings and perennial seedlings are very similar. Later in the year it may be necessary to remove the plant carefully from the soil to make the determination. Generally, if the plant is relatively easily removed from the soil by pulling with the hands without separating it from underground parts it is an annual. If in pulling the plant from the soil it breaks away from underground parts it is likely a perennial.

Annuals are generally characterized by weak, fibrous root systems (Figs. 10, 14) whether or not the plant is tufted. Perennials are frequently densely tufted possessing a strong fibrous root system and may or may not have rhizomes. Rhizomes may be thick or relatively slender, tough or easily broken. They may be quite long or, occasionally as in some grasses, quite short and inconspicuous. These rhizomes are usually broken and may not be observed if the plant is simply pulled from the soil rather than being dug. Therefore it is advisable to dig the plant if practicable.

2. Bud-shoot

The keys make use of the manner in which the leaf is arranged in the bud-shoot, i.e., folded or rolled (Fig. 13). When necessary this character can be determined either by examining the way in which the new leaf naturally emerges from the sheath or by cutting across the outer sheath just below the

collar of the last fully emerged leaf. Make the cut with a sharp blade otherwise the arrangement will be disturbed. The arrangement of the inner leaf can then be determined by examining it with a hand lens (at least 10x).

3. Sheath

Usually, if the leaves are rolled in the bud-shoot the sheath in cross section will be round, or nearly so. If, however, the leaves are folded and appear flattened in the bud-shoot the sheath will be flattened; but there are exceptions.

The sheath may be open (Fig. 2) or it may be closed (Fig. 3) for most of its length. If open, the margins may or may not overlap. The degree of hairiness is also useful and is used in the keys, but this character may be quite variable.

4. Auricles

Auricles (Fig. 12) appear as ear- or flap-like appendages occurring in some grasses and in the rushes included in this manual. They occur at the top of the leaf sheath and may or may not clasp the stem. Auricles may vary considerably in size and shape even on the same plant.

5. Ligule

The ligule (Figs. 2, 6, 7), a structure produced at the juncture of the leaf sheath and blade, is a useful vegetative character. It appears to be quite constant within a species with regard to texture, structure, shape, length, and nature of the margin. It occurs in most grasses and many of the sedges of the genus Carex.

6. Leaf

Various attributes of the leaf blade are also used in the keys. Though there may be considerable variation in the width, length, and hairiness of the blade surfaces, these variations are generally within relatively well-defined limits. Length and width especially, and the degree of hairiness reflect to a greater or lesser degree the rigors of the environment. For example, where a wide range is given in the keys for blade width, although some lower limits are derived from measurements of grasses of arid western habitats, these lower limits may be represented in our flora by plants from dry, rocky, exposed habitats.

The leaf blade may vary also in cross section and in its degree of rigidity. Blades may be flat, V-shaped, or inrolled (Fig. 17). Also the blade may be quite stiff, extending rigidly from the stem, or it may be less so and said to be flaccid, sometimes drooping at some distance from the stem.

General Information

The keys that follow are dichotomous: with only two exceptions they present a pair of choices. Depending upon the nature of the character, it is necessary to select between two more or less contrasting descriptions, choosing the one that best describes that particular character represented

in the specimen in question. After the initial selection has been made proceed to the next set. This process is continued until the species is determined.

Read the species description to determine whether or not the specimen has been correctly identified. If the specimen doesn't match the description, repeat the process. If the character variation is great enough to place it in both choices, e.g. a grass with a blade width of 2-8 mm it can be keyed regardless of the choice made. If a specimen does not fit it is probably not included in the key.

For additional descriptive information and drawings of the mature plant, flowers, and fruits of the species included in the keys refer to the section on Literature Consulted. Of particular value in this respect are: The Grasses of Missouri; Flora of Missouri; Intermountain Flora, vol. 6; Gray's Manual of Botany, 8th ed.; Manual of the Grasses of the United States, 2nd ed.; and The Illustrated Flora of Illinois: Grasses, 2 volumes.

The diagnostic vegetative characters used here are derived, in part, from the sources listed in Literature Consulted. Most useful for the grasses was C. L. Kucera's The Grasses of Missouri, J. A. Steyermark's Flora of Missouri, and Intermountain Flora, vol. 6 by A Cronquist, et al. For the sedges and rushes the latter two works proved to be the most useful. Many specimens of Missouri material from the University of Missouri-Columbia (UMC) Herbarium were also examined. Specimens collected during summer field work with the Integrated Pest Management Program also yielded useful data.

Nomenclature in this manual is derived from several sources. That of the Flora of Missouri is followed exclusively for the sedges and rushes. Grass nomenclature is mostly in accordance with that in Flora of Missouri; in some instances the nomenclature in The Grasses of Missouri or Intermountain Flora is followed. Alternate technical names are given for two species because each one may appear under one of the two names in current literature. Common names are from a variety of sources, however, when possible the common names in weeds of the North Central States were used.

Species that should be included in the manual were determined, in part, by reference to Weeds of the North Central States, The Grasses of Missouri, and Flora of Missouri. Field observations and information obtained from the UMC Herbarium specimens also contributed to the decision. Criteria applied were: the relative economic importance of the plant as a competitor: the presence, or absence, of the plant within the state; the habitat preference of the plant; and to some extent the abundance and frequency of occurrence.

Some of the grasses included are commonly cultivated for forage or as small grain crops. These grasses frequently occur in cultivated fields as relicts reflecting the last grain or forage crop grown, but, in general, they are not long lasting.

Explanation of Measurements

A range of measurements is given for some characters, e.g., leaf width, and ligule length. Yellow foxtail leaves may range from 5-10 mm in width. The leaf width of wirestem muhly is shown as (1)2-6(8) mm indicating the most frequent width as 2-6 mm, but that plants occasionally occur with leaves as narrow as 1 mm or as wide as 8 mm.

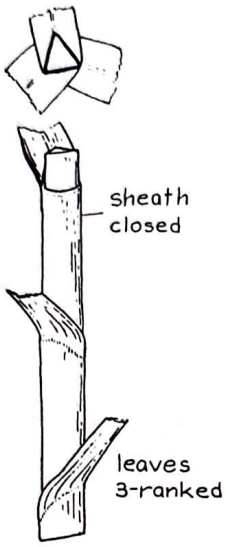


Fig. 1

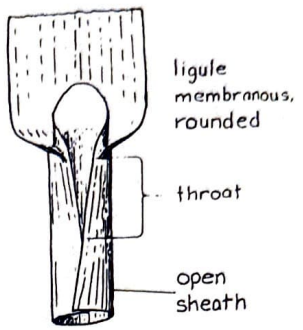


Fig. 2

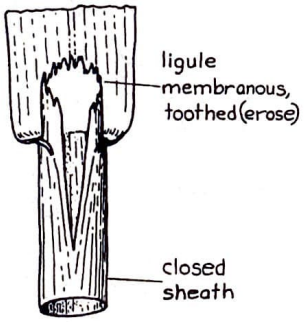
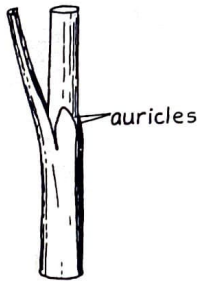
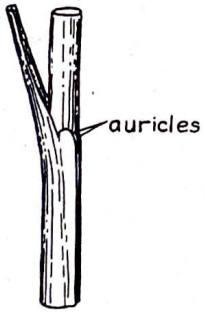


Fig. 3



Juncus tenuis

Fig. 4a



Juncus interior

Fig. 4b

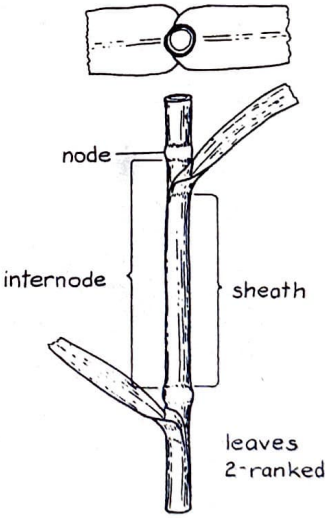


Fig. 5

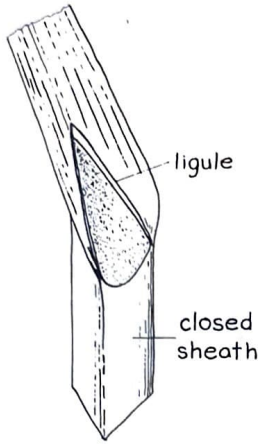


Fig. 6

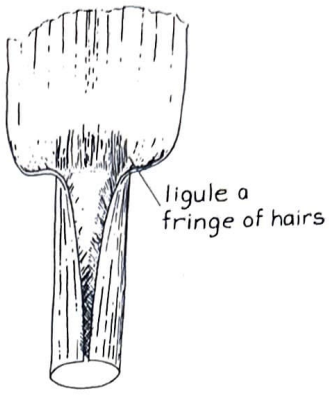


Fig. 7

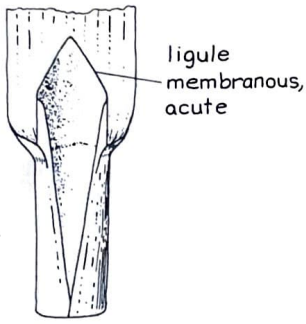


Fig. 8

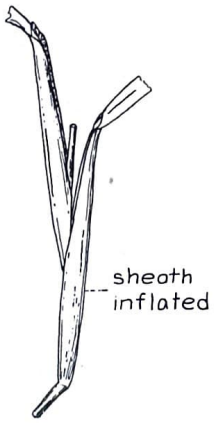


Fig. 9

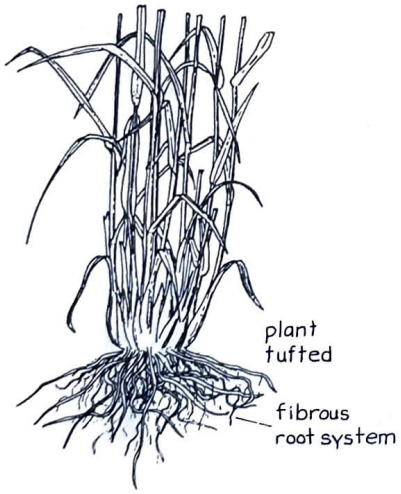


Fig.10

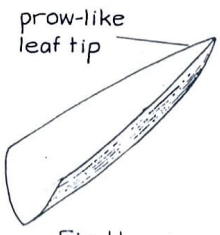


Fig.11

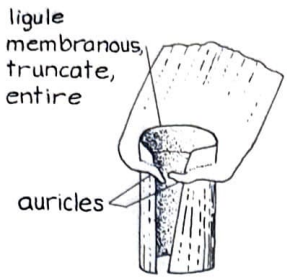


Fig. 12

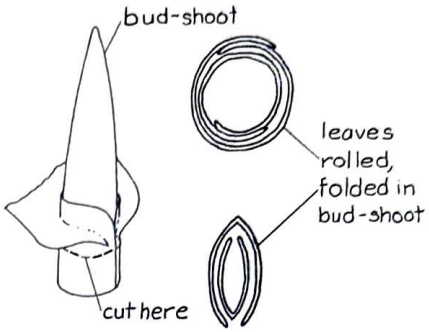


Fig. 13

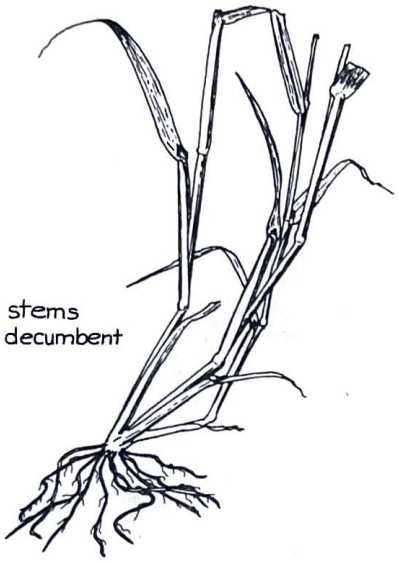


Fig. 14

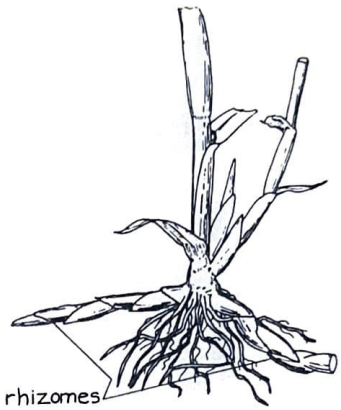


Fig. 15

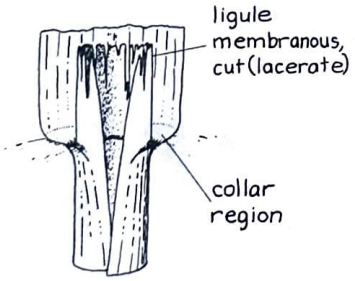


Fig. 16

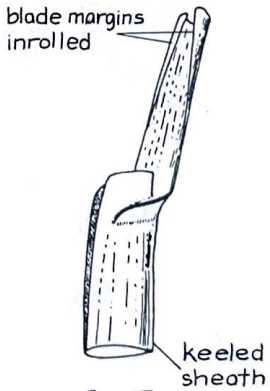


Fig. 17

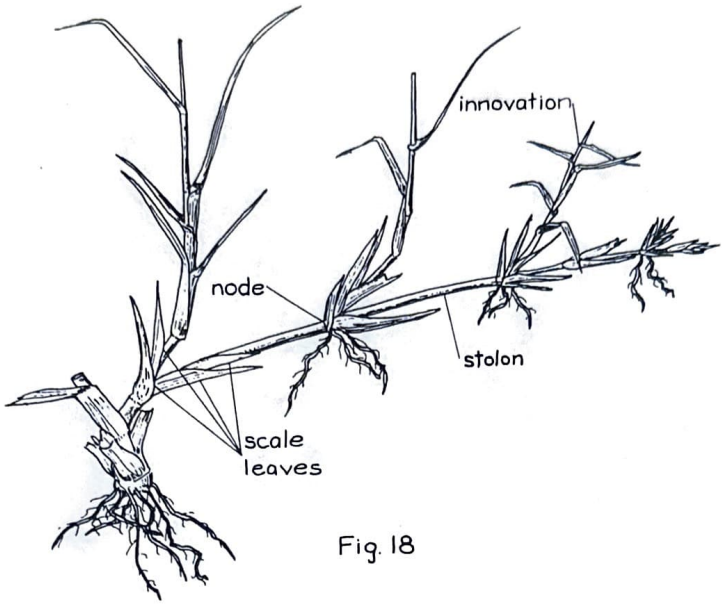


Fig. 18

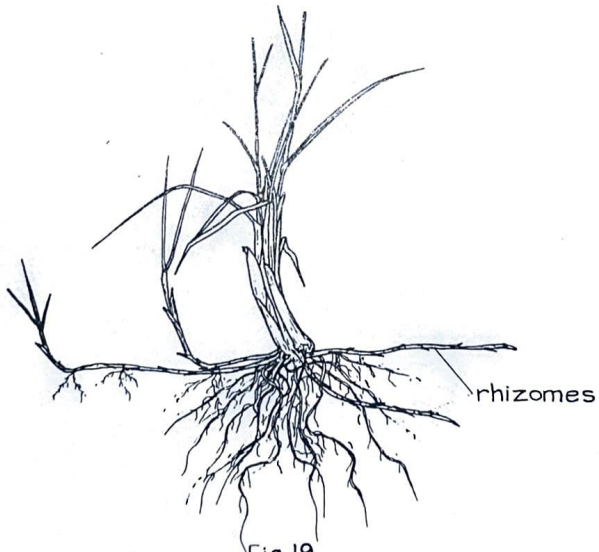


Fig. 19

List of Species Included in Keys

Common Name	Scientific Name	No.*
Sedges - Family Cyperaceae		
Sedge	Carex spp.	1.
Nutgrass, Yellow	Cyperus esculentus	2.
Sedge, Umbrella	Cyperus strigosus	3.
Sedge	Cyperus ovularis	4.
Sedge	Cyperus acuminatus	5.
Rush - Family Juncaceae		
Rush, Path	Juncus tenuis	1.
Rush, Inland	Juncus interior	2.
Grasses - Family Poaceae		
Barley, Little	Hordeum pusillum	40.
Barley, Wild	Hordeum jubatum	18.
Beadgrass	Paspalum ciliatifolium	25.
Bluegrass, Annual	Poa annua	9.
Bluegrass, Canada	Poa compressa	7.
Bluegrass, Kentucky	Poa pratensis	8.
Brome, Smooth	Bromus inermis	17.
Broomsedge	Andropogon virginicus	21.
Cheat or Chess	Bromus secalinus	16.
Chess, Downy	Bromus tectorum	15.
Chess, Japanese	Bromus japonicus	14.
Crabgrass, Large	Digitaria sanguinalis	22.
Crabgrass, Small or Smooth	Digitaria Ischaemum	23.
Cupgrass, Prairie	Eriochloa contracta	45.
Fescue, Meadow	Festuca elatior	38.
Foxtail, Field	Alopecurus carolinianus	29.
Foxtail, Giant	Setaria Faberii	53.
Foxtail, Green	Setaria viridis	50.
Foxtail, Meadow	Alopecurus pratensis	43.
Foxtail, Yellow	Setaria glauca	47.
Goatgrass	Aegilops cylindrica	11.
Goosegrass	Eleusine indica	20.
Grass, Barnyard	Echinochloa spp.	56.
Grass, Bermuda	Cynodon dactylon	6.
Grass, Dropseed	Sporobolus neglectus	2.
Grass, Orchard	Dactylis glomerata	27.
Grass, Porcupine	Stipa spartea	13.
Grass, Poverty	Aristida dichotoma	4.
Grass, Salt-Meadow	Leptochloa fascicularis	30.
Grass, Triple-Awn	Aristida oligantha	3.

*Refers to species description number

Grass, Woolly Panic	*Panicum lanuginosum* var. *fasciculatum*	52.
Hairgrass	*Agrostis hiemalis*	10.
Johnsongrass	*Sorghum halapense*	31.
Lovegrass	*Eragrostis pectinacea*	1.
Lovegrass, Purple	*Eragrostis spectabilis*	55.
Muhly, Wirestem	*Muhlenbergia frondosa*	19.
Oats	*Avena sativa*	32.
Oatgrass, Poverty	*Danthonia spicata*	5.
Panicum, Fall	*Panicum dichotomiflorum*	54.
Paspalum	*Paspalum pubiflorum* var. *glabrum*	26.
Paspalum, Smooth	*Paspalum laeve*	24.
Purpletop	*Tridens flavus*	49.
Quackgrass	*Agropyron repens*	33.
Redtop	*Agrostis stolonifera* var. *major*	42.
Rye	*Secale cereale*	34.
Rye, Canada Wild	*Elymus canadensis*	39.
Rye, Virginia Wild	*Elymus virginicus*	37.
Ryegrass, Italian	*Lolium multiflorum*	35.
Ryegrass, Perennial	*Lolium perenne*	12.
Sandbur, Field	*Cenchrus longispinus*	44.
Sprangletop, Red	*Leptochloa filiformis*	41.
Stinkgrass	*Eragrostis cilianensis*	48.
Switchgrass	*Panicum virgatum*	51.
Timothy	*Phleum pratense*	28.
Wheat	*Triticum aestivum*	36.
Witchgrass	*Panicum capillare*	46.

Key to Families

A. Annuals or perennials; stems triangular in cross section (at least in those species treated here), solid, with pith, nodes soft, inconspicuous; leaves three-ranked, grass-like; sheaths closed (fig. 1)
Sedges - Cyperaceae

A. Annuals or perennials; stems round, oval or flat, but not triangular in cross section, hollow or solid; leaf sheaths open or closed (figs. 2, 3)

B. Stem round (flattened in drying) with spongy pith; sheaths open, the margins thin, dry, membranous, whitish, overlapping only slightly, extended vertically (in those treated here) to form a pair of auricles (figs. 4a,b) to 3.5 mm long at the junction of the sheath and blade; slightly to densely tufted perennials
Rushes - Juncaceae

B. Stem round to flattened, usually hollow or with pith, nodes solid, hard, usually conspicuous; leaves two-ranked (fig. 5); sheaths open, either split or overlapping on one side (closed in the bromes - Bromus, and some others not described here), auricles, if present, not as in alternate B; perennials of various types or annuals
Grasses - Poaceae

Key to the Sedges - Family *Cyperaceae*

1. Ligule generally present though small and inconspicuous, to about 0.3 mm long (fig. 6); sheath closed, loosely or tightly enveloping the stem; leaves grass-like mostly from the base of the plant, the blades of some of the lowermost ones frequently very short and non-green — 1. Sedges - *Carex* spp.[1]
1. Ligule absent; sheath closed (in *Cyperus acuminatus* especially, the tissue may be very thin and easily torn); leaves grass-like, mostly crowded at the base of the plant, one or more lacking sheaths occuring at the stem top at the base of the inflorescence when it is present
   2. Perennials with elongate rhizomes or hardened, knot-like enlargements at the base of the plant; blades more than 2 mm wide, usually 2-10(15) mm
      3. Plant with few to many slender elongate rhizomes which end in small, nut-like tubers; stems usually arising singly; leaves clustered at the base of the plant, the blades mostly 3-8(9) mm wide — 2. Yellow Nutgrass - *Cyperus esculentus*
      3. Plant lacking slender rhizomes, the stem bases with a hard, knot-like enlargement; stems one to several; blades mostly 2-10(15) mm wide — 3. Umbrella-Sedge - *Cyperus strigosus*; 4. Umbrella-Sedge - *Cyperus ovularis*
   2. Annual with relatively weak fibrous roots, forming small tufts; leaves few from the base, 1-2(3) mm wide — 5. Sedge - *Cyperus acuminatus*

[1]Because of the size of this group (the largest genus in the Missouri flora) and the difficulty encountered in distinguishing between species even though flowering material may be available, it is impractical in a work of this scope to attempt to carry identification any farther. There are, however, certain species more likely to be encountered than others in the types of habitats with which this work is primarily concerned. Refer to the description of the *Carex* for information on these more frequently encountered species.

Key to the Rushes - Family Juncaceae

1. Auricles delicate, flap-like, whitish, 1-3.5 mm long
   1. Path Rush - Juncus tenuis
1. Auricles short, less than 1 mm long, not flap-like, firm, rounded, pale- or gray-brown
   2. Inland Rush - Juncus interior

Key to the Grasses - Family *Poaceae*

1. Blade 3 mm wide or narrower (in salt meadow grass *Leptochloa fascicularis*, porcupine grass *Stipa spartea*, and goatgrass *Aegilops cylindrica*, some leaves may be more than 3 mm wide); sheaths round, flattened, or somewhat flattened
   2. Ligule a fringe of hairs (fig. 7)
      3. Ligule 0.2-1.5 mm long
         4. Annual with weak, fibrous root system; if tufted, without many long, curled basal leaves
            5. Sheaths round, mostly smooth; blades 1-3(3.5) mm wide, somewhat rough above, smooth below; ligules 0.2-0.4 mm long — 1. Lovegrass - *Eragrostis pectinacea*
            5. Sheaths flattened to somewhat flattened
               6a. Upper sheaths inflated (fig. 9), frequently pulling away and diverging from the stem — 2. Dropseed Grass - *Sporobolus neglectus*
               6b. Upper sheaths not as in alternate, but somewhat loosely enveloping the stem — 3. Triple Awn Grass - *Aristida oligantha*
               6c. Vegetatively very similar to Triple Awn Grass *Aristida oligantha*, leaves generally somewhat narrower, and the upper leaf-sheaths becoming somewhat inflated at maturity — 4. Poverty Grass - *Aristida dichotoma*
         4. Perennial with fibrous root system forming dense tufts or clumps (fig. 10) of many long, curled leaves and several stems — 5. Poverty Oatgrass - *Danthonia spicata*
      3. Ligule 2-3 mm long, fused at the base; sheath smooth; blade 2-3(4) mm wide, sparsely short-hairy above, smooth below; perennial with extensively creeping rhizomes and stolons (Figs. 18, 19) — 6. Bermuda Grass - *Cynodon dactylon*
   2. Ligule membranous (figs. 2, 3, 8, 16)
      7. Ligule 2 mm long or shorter
         8. Auricles absent; leaves with or without a prow-like tip; stem round or flattened
            9. Leaves with a prow-like tip (fig. 11)
               10a. Perennial from slender creeping rhizomes (fig. 19); sheaths and stems strongly flattened; blades smooth, 2-3 mm wide; ligules mostly 1-1.5 mm long; plants glaucus throughout — 7. Canada Bluegrass - *Poa compressa*
               10b. Perennial from creeping rhizomes (fig. 19); sheaths and stems round to slightly flattened; blades mostly 1.5-3 mm wide, smooth; ligules 0.5-1.7(2.5) mm long; plants usually green throughout, but occasionally glaucus — 8. Kentucky Bluegrass - *Poa pratensis*
               10c. Annual with fibrous roots; ligules mostly 1-2 mm long; sheaths flattened, open about one-half their length; blades smooth, 2-3 mm wide; plants bright green — 9. Annual Bluegrass - *Poa annua*

9. Leaves without a prow-like tip; stems round; sheaths round; blades 1-2 mm wide; ligule mostly 1-3 mm long with cut margin — 10. Hairgrass - Agrostis hiemalis

8. Auricles (fig. 12) present; leaf tips flat; stems somewhat flattened to round

11. Auricles small; ligules 0.2-0.5 mm long, truncate; sheaths round, overlapping margins hairy — 11. Goatgrass - Aegilops cylindrica

11. Auricles well-developed, up to 2 mm long on most leaves; ligules 0.5-1.5 mm long, rounded to acute; sheaths flattened to almost round, overlapping margins smooth — 12. Perennial Ryegrass - Lolium perenne

7. Ligules 4-6 mm long; basal sheaths somewhat flattened to round, upper sheaths round; leaves 2-5 mm wide; auricles absent — 13. Porcupine Grass - Stipa spartea

1. Blades more than 3 mm wide (except sometimes less in salt meadow grass Leptochloa fascicularis, porcupine grass Stipa spartea, goatgrass Aegilops cylindrica, and perennial ryegrass Lolium perenne) and treated under alternate 1.; sheath round, flattened or somewhat flattened

12. Ligule present

13. Ligule membranous (figs. 2, 3, 8, 16)

14. Sheath closed to near top, round

15. Blade hairy above and below, 3-10 mm wide

16. Sheath densely soft white hairy

17. Ligule mostly 0.8-1.5 mm long, but occasionally longer; hairs often over 1 mm long — 14. Japanese Chess - Bromus japonicus

17. Ligule mostly 1.5-3(4) mm long; hairs generally less than 1 mm long — 15. Downy Chess - Bromus tectorum

16. Sheath mostly smooth, sometimes short-hairy — 16. Cheat or Chess - Bromus secalinus

15. Blade mostly smooth above and below, rarely short-hairy, generally 5-15 mm wide — 17. Smooth Brome - Bromus inermis

14. Sheath open, round, flattened or somewhat flattened

18. Sheath distinctly flattened or compressed

19. Ligule 1.0 mm long or shorter

20. Leaves rolled in bud-shoot (fig. 13)

21. Sheath hairy, at least at top, collar not hairy on margins; ligule 0.5-1 mm long — 18. Wild Barley - Hordeum jubatum

21. Sheath smooth, collar hairy on margins; ligule about 1 mm long — 19. Wirestem Muhly - Muhlenbergia frondosa

20. Leaves folded in bud-shoot (fig. 13)

22. Blade tips prow-like (fig. 11), about 3 mm wide; sheath smooth; ligule 0.8-1 mm long, slightly rounded — 9. Annual Bluegrass - Poa annua

22. Blade tips flat or in broomsedge Andropogon virginicus, the tips a folded V shape, but not prow-like, blades 3-5 (8) mm wide

23. Ligule 0.3-1.2 mm long, truncate, sometimes fringed with minute hairs; sheath flattened, keeled, basal ones whitish at base, upper margins and throat sometimes with hairs 2-6 mm long; blades (2)3-5(8) mm wide, sparsely long-hairy near base above, smooth, keeled below
20. Goosegrass - Eleusine indica

23. Ligule 0.4-0.8 mm long, with fringe of hairs; sheath flattened at base of clumps, smooth to sparsely long-hairy along margins, with or without hairy margins; blade 3-5 mm wide, smooth to rough above, sometimes long-hairy near base, smooth to rough below, keeled 21. Broomsedge - Andropogon virginicus

19. Ligule more than 1.0 mm long
24. Leaves rolled in bud-shoot (fig. 13)
25. Annuals with weak, fibrous root system (fig. 14)
26. Blade 5-10 mm wide, 6-16 cm long, both surfaces covered with long, soft hairs; sheath long-hairy; ligule 0.5-1.5(2) mm long, truncate to rounded, sometimes toothed
22. Large Crabgrass - Digitaria sanguinalis

26. Blade smooth on both surfaces, sometimes with a few hairs near base; ligule 1-2 mm long, truncate to rounded
23. Small Crabgrass - Digitaria Ischaemum

25. Perennials, tufted (fig. 10), with or without short rhizomes
27. Plants erect, to somewhat spreading
28. Ligule membranous, truncate to acute, 1-2.5 mm long; sheath flattened, smooth or hairy at top, blade 3-10 mm wide to 30 cm long, smooth to sparsely hairy on top, smooth, keeled below, margins sometimes hairy
24. Smooth Paspalum - Paspalum laeve

28. Ligule membranous, truncate with notched or wavy margin, about 1.0 mm long, margins extending into auricle-like projection; sheath smooth or variously hairy, flattened, often reddish; blade 3-20 mm wide, 6-35 cm long, smooth or nearly so on both surfaces, margins hairy, dense row of white hairs behind ligule
25. Beadgrass - Paspalum ciliatifolium

27. Plants robust, stems decumbent (fig. 14), rooting at the enlarged, dark, hairy nodes; ligule membranous, acute, 2-2.5 mm long with toothed margins; sheaths flattened, smooth to somewhat hairy, purplish; blade 6-14 mm wide, mostly 10-15 cm long, smooth or sparsely hairy, ring of white hairs behind ligule
26. Paspalum - Paspalum pubiflorum var. glabrum

24. Leaves folded in bud-shoot
29. Ligule 2 mm long or less; blade and sheath smooth, blade with prow-like tip, 1-3 mm wide 9. Annual Bluegrass - Poa annua
29. Ligule 4-8 mm long, pointed, thin, cut; blade 4-6(10) mm wide, smooth; sheath smooth; large bunchgrass to 1.2 m tall
27. Orchard-Grass - Dactylis glomerata

18. Sheath not distinctly flattened, but round to somewhat flattened
30. Ligule 3 mm long or longer
31. Blade 10 mm wide or narrower
32. Blade 4-10 mm wide; ligule mostly 2-3 mm long, rounded, sometimes cut
28. Timothy - Phleum pratense
32. Blade 5 mm wide or less
33. Ligule 2.0-3.5 mm long, pointed or acute; blade 2-5 mm wide, not much longer than sheath
29. Field Foxtail - Alopecurus carolinianus
33. Ligule 4-7 mm long
34. Blade 1.5-4.0 mm wide; sheath smooth, at least the basal ones somewhat flattened, somewhat inflated (fig. 9) and diverging from the stem; ligule 5-7 mm long, acute
30. Salt-Meadow Grass - Leptochloa fascicularis
34. Blade (2)3-5 mm wide; sheath smooth, basal ones not inflated, but somewhat flattened; ligules 4-6 mm long
13. Porcupine Grass - Stipa spartea
31. Blade 10-20 mm wide or wider
35. Perennial, with stout, scaly rhizomes; ligule 3-5 mm long, lower part membranous, about one-third a fringe of dense hair; blade 10-20 mm wide or more
31. Johnsongrass - Sorghum halapense
35. Annual, lacking rhizomes; ligule 2-5.5 mm long, membranous, toothed; blade 5-15 mm wide, or more 32. Oats - Avena sativa

30. Ligule less than 3 mm long
    36. Auricles present on some or all leaves
        37. Leaves folded in bud-shoot; auricles well developed on most leaves, up to 1.5(2.0) mm long; blade 1-3(4) mm wide, smooth; sheaths smooth
            12. Perennial Ryegrass - Lolium perenne
        37. Leaves rolled in bud-shoot
            38. Plants with yellowish, long, creeping rhizomes; blade (3)5-10(14) mm wide, mostly rough and short-hairy above, smooth or short-hairy below; ligule mostly 0.5 mm long, rounded, with a fringe of short hair
                33. Quackgrass - Agropyron repens
            38. Plants lacking long, creeping, rhizomes
                39. Leaves and stems glaucus, appearing whitish or bluish-green; margins of blade rough
                    34. Rye - Secale cereale
                39. Leaves and stems not glaucus, but green (sometimes glaucus in Canada Wild Rye)
                    40. Blade margins smooth, at least not harshly rough
                        41. Sheath margins hairy; auricles small; blade 2-4 mm wide; ligule 0.2-0.5 mm long
                            11. Goatgrass - Aegilops cylindrica
                        41. Sheath margins lacking hair
                            42. Blade mostly 3.5-7(10) mm wide, smooth to rough on upper surface, smooth below; ligule 0.5-1.5 mm long, mostly rounded, smooth; auricles small to well developed
                                35. Italian Ryegrass - Lolium multiflorum
                            42. Blade mostly 7-11(20) mm wide, smooth to rough on the upper surface, smooth below; ligule 0.5-1.5 mm long, truncate to rounded, cut; auricles small, smooth or sometimes hairy
                                36. Wheat - Triticum aestivum

40. Blade margins rough
    43. Ligule mostly less than 1 mm long
        44. Ligule 0.2-0.6 mm long, truncate, with fringe of short hairs; blade 5-15 mm wide, smooth to rough, auricles up to 1 mm long
            37. Virginia Wild Rye - Elymus virginicus
        44. Ligule 0.2(1) mm long truncate, smooth; blade 3-5(7) mm wide, smooth to rough above, smooth and glossy below; auricles small to well developed
            38. Meadow Fescue - Festuca elatior
    43. Ligule 0.2-1.5(2) mm long, truncate, with fringe of short hairs; blade 10-20 mm wide, green, but may sometimes be glaucus, smooth to rough above and below, keeled below
        39. Canada Wild Rye - Elymus canadensis

36. Auricles absent
    45. Ligule 1 mm long or shorter
        46. Plant with short, creeping, scaly rhizomes, ligule about 1 mm long; blade 2-6(8) mm wide, rough above and below near tip
            19. Wirestem Muhly - Muhlenbergia frondosa
        46. Plant without rhizomes
            47. Plant densely tufted; roots densely fibrous; perennial
                18. Wild Barley - Hordeum jubatum
            47. Plants not densely tufted; roots shallow, fibrous; annual
                40. Little Barley - Hordeum pusillum
                (The above two species may not be separable on the basis of vegetative character alone.)
    45. Ligule more than 1 mm long
        48. Sheath hairy at least at top or throat
            49. Ligule 0.5-1.5(1.8) mm long, often short-hairy; sheath densely covered with soft, relatively long, straight hairs, closed to near top
                14. Japanese Chess - Bromus japonicus

49. Ligule 0.5-2.0 mm long; sheath sparsely long-hairy at least near the top and near margins, somewhat flattened, open
41. Red Sprangletop - Leptochloa filiformis

48. Sheath not hairy
50. Perennial with creeping rhizomes; ligule membranous to 3(4) mm long, truncate to rounded, sometimes toothed; sheath round, smooth; blades 3-5(10) mm wide
42. Redtop - Agrostis stolonifera var. major

50. Annuals or perennials lacking creeping rhizomes
51. Ligule (1.5)2-3(5) mm long, obtuse, sometimes cut; blade 3-6.5(8) mm wide, sometimes with tiny auricles; stems bulbous or swollen at base
28. Timothy - Phleum pratense

51. Ligule (1.5)2-3.5(5) mm long, truncate to obtuse, fringed with tiny hairs, sometimes cut; stems not bulbous or swollen at base, sometimes rooting at lower nodes
43. Meadow Foxtail - Alopecurus pratensis

13. Ligule a fringe of hair (fig. 7)
52. Ligule 1 mm long or shorter
53. Blade 5 mm wide or narrower
54. Perennial with long, hard, scaly rhizomes (fig. 15), and flat extensively creeping or spreading stolons (fig. 18); stem flattened, wiry, rooting at the lower nodes; leaves 2-3(4) mm wide
6. Bermuda Grass - Cynodon dactylon

54. Annuals lacking hard, scaly rhizomes and/or stolons
56. Sheaths flattened, somewhat inflated (fig. 9), keeled, smooth, except sometimes the collar with hairy margins; ligule 0.5-1.0(1.5) mm long
44. Field Sandbur - Cenchrus longispinus

56. Sheaths round to oval, covered with short hair; ligule about 0.5 mm long
45. Prairie Cupgrass - Eriochloa contracta

53. Blade more than 5 mm wide
57. Sheath hairy

58. Ligule 1-1.5 mm long, the hairs fused at the base; sheaths round, covered with soft to stiffish long hair
46. Witchgrass - Panicum capillare
58. Ligule about 0.5 mm long; sheaths round to oval, covered with short hair
45. Prairie Cupgrass - Eriochloa contracta
57. Sheath smooth; round to somewhat flattened
59. Annuals, with relatively shallow, weak, fibrous root system
60. Sheath distinctly flattened, smooth; blade 5-10 mm wide, smooth on both surfaces except hairy on upper surface near base; ligule densely hairy, about 1 mm long
47. Yellow Foxtail - Setaria glauca
60. Sheath round to somewhat flattened, smooth, occasionally hairy at throat; blade 2-7 mm wide, smooth to slightly rough above, smooth below; ligule dense row of hairs about 0.5 mm long; glandular dots along lower margins of leaves, on sheaths and nodes
48. Stinkgrass - Eragrostis cilianensis
59. Perennial, tufted, with dense, tough, fibrous root system; upper sheaths round, at base of plant conspicuously flattened, smooth, sometimes hairy near top; blade 3-8 mm wide, smooth to somewhat hairy above, smooth below at least near base; ligule a fringe of hairs 0.4-0.8 mm long
49. Purpletop - Tridens flavus
52. Ligule more than 1 mm long
61. At least one sheath margin hairy (fig. 7)
62. Ligule not more than 2 mm long; annuals lacking rhizomes
63. Sheath somewhat flattened, with dense, long, stiff hair, margins hairy; ligule of hairs 1-1.5 mm long, fused at base; blade soft, hairy above and below, 4-12(15) mm wide
46. Witchgrass - Panicum capillare
63. Sheath round to somewhat flattened, keeled, smooth, hairy at top, or with scattered short hairs near base of plant, especially upper margins densely hairy; ligule a dense fringe of hairs 1-1.5 mm long; blades mostly smooth, (3)4-10(14) mm wide
50. Green Foxtail - Setaria viridis
62. Ligule more than 2 mm long; annuals or perennials with rhizomes
64. Plants perennial with numerous scaly rhizomes, or tufted and lacking scaly rhizomes

65. Plant with numerous scaly rhizomes; ligule a dense fringe of hair 0.5-1.0 mm long, interspersed with longer hairs to 5 mm long; sheath smooth except for fringe of hair on upper margins; blade 4-10(15) mm wide, smooth to sometimes short-hairy near base 51. Switchgrass - Panicum virgatum

65. Plant forming a small to large tuft lacking rhizomes; ligule of relatively long hairs mostly 3-5 mm long; sheath nearly smooth to variously hairy; blade mostly 4-8 mm wide, variously hairy

52. Woolly Panic Grass - Panicum lanuginosum var. fasciculatum

64. Plants annual lacking rhizomes; ligule a fringe of hairs 2-3 mm long; sheath round, smooth to somewhat rough, margins hairy; blade 10-15(20) mm wide, short-hairy above, smooth below 53. Giant Foxtail - Setaria Faberii

61. Neither sheath margin hairy

66. Slightly or densely tufted annuals lacking rhizomes

67. Sheath somewhat flattened, with dense, long, stiff hair; ligule of hairs 1-2 mm long, fused at base; blade 4-12(15) mm wide, hairy above and below 46. Witchgrass - Panicum capillare

67. Sheath round, smooth, with smooth margins; ligule a fringe of hairs mostly 2-3 mm long, approximately lower third membranous; blade smooth to somewhat rough above, smooth below, mostly 4-15 mm wide with prominent whitish midvein 54. Fall Panicum - Panicum dichotomiflorum

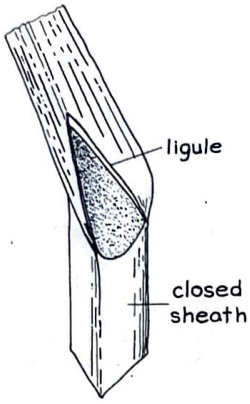
66. Slightly to densely tufted perennial, sometimes with short, stout rhizomes; stems round; erect or spreading, not rooting at lower nodes; ligule a fringe of hairs mostly 3-6 mm long; blade mostly 3-5 mm wide 55. Purple Lovegrass - Eragrostis spectabilis

12. Ligule absent; sheath flattened, smooth; blade smooth 3-12(16) mm wide 56. Barnyard Grass - Echinochloa spp.

Description of Species

Arranged in the order of their occurrence in the keys. Unless stated otherwise, the species is considered to be of common occurrence throughout the state.

Sedges



1. Sedge - Carex spp.

(The following description is given as it applies to the species referred to in Note 1 in the keys.)

Perennials; stems triangular in cross-section, solid; sheaths closed, tightly or loosely enveloping the stem, the ventral or inner band (the side away from the blade) of varying textures and thicknesses; leaves three-ranked, mostly from the base of the plant, grass-like; ligule present, but very small, not exceeding 0.3 mm in length.

Species of Carex most likely to be encountered are: Carex cephalophora and Carex Muhlenbergii, generally distributed throughout Missouri; Carex gravida found mostly in northern, western, and central Missouri; Carex molesta, Carex aggregata, and Carex Bushii, scattered over most of the state though absent in southern and central Missouri.

Depending upon the habitat preferences of the above species they may be encountered in bottomland and/or upland pastures, open fields, and on grassy slopes.

2. Yellow Nutgrass - Cyperus esculentus L.

Perennial with many slender, elongate, scaly rhizomes which terminate in small tubers; stems sharply triangular, smooth, solitary, 10-70 cm tall; leaves 3-8(9) mm wide, elongate, crowded at the base of the plant.

Occurs in low, moist areas of open ground, cultivated fields, pastures, borders of ponds, lakes, low wet areas in prairies, along railroads.

3. Sedge, Umbrella - Cyperus strigosus L.

A short-lived perennial, the base of the stem or stems developing a hard, knot-like enlargement; stems triangular, smooth, 10-60(100) cm tall; leaves 2-10(15) mm wide, crowded near base of plant.

Found in low, moist areas of open ground, fallow and cultivated fields, roadside ditches, along borders of streams, ponds, lakes, and along railroads.

4. Sedge - Cyperus ovularis (Michx.) Torr.

Very similar to C. strigosus and difficult to distinguish from that species on the basis of vegetative characteristics. Distinction is primarily based on characteristics of the inflorescence and floral structures.

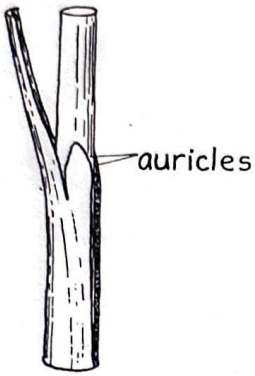
Occurs in sandy soils along streams, low open fields, upland fields, fallow fields, waste ground, upland and lowland banks along roadsides, open upland woods, dry upland glades, open ground along railroads. Most common in counties of southern and central Missouri, scattered in northern part of the state.

5. Sedge - Cyperus acuminatus Torr. & Hook.

A somewhat tufted annual; stems triangular, smooth, 5-35(40) cm tall; leaves 1-2(3) mm wide, elongate, few, borne near the base.

Found in low, moist areas of open ground and cultivated fields. Scattered throughout the state.

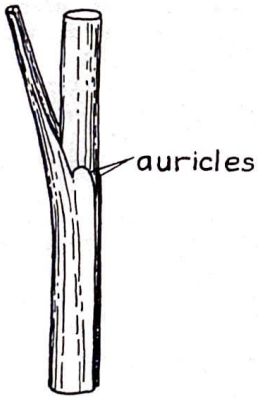
Rushes



1. Path Rush - Juncus tenuis Willd.

Perennial forming small, wiry tufts; stems with spongy pith, round, slender, tough (10)15-60 cm tall; sheaths open, not overlapping, the margins membranous, whitish, extended beyond the sheath top to form a pair of delicate, vertical, white auricles 1-3.5 mm long; blades flat or with the margins inrolled, to 1.5 mm wide, lacking on some of the lower sheaths, the sheaths with a bristle-like tip instead.

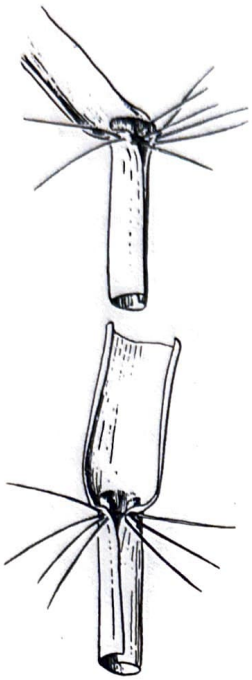
Occurs commonly in paths, pastures, thickets, wet open ground, waste ground, along streams and roadsides.



2. Inland Rush - Juncus interior Wieg.

Auricles very short, rounded, membranous, projecting very little beyond the sheath top. Distinguished from the path rush by characteristics of the inflorescence and floral parts. Otherwise this species is very similar to the path rush and difficult to distinguish from it on the basis of vegetative characters alone.

Occurs in upland prairies, meadows, glades, fallow fields, open grounds, along roadsides. Throughout Missouri except apparently absent from the southeastern portion.

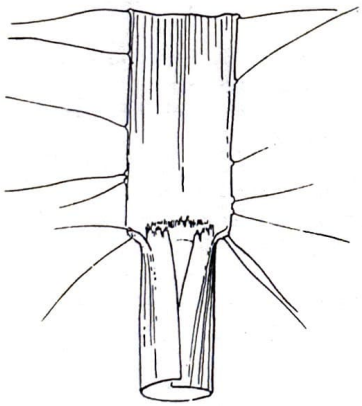


Grasses

1. Lovegrass - Eragrostis pectinacea (Michx.) Nees

Annual, forming dense tufts or clumps; stems (1)1.5-60(75) cm tall; erect to somewhat decumbent, spreading, branching at the base; sheaths round, smooth except for tufts of long hair at top, open, the overlapping margins thin and hyaline; blades flat or the margins inrolled, 1-3(3.5) mm wide, somewhat rough above, smooth below; auricles absent; ligules a dense row of hairs 0.2-0.4 mm long.

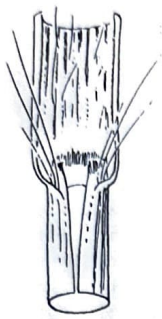
Occurs in waste ground, cultivated fields, fallow ground, open ground along streams and pond borders, sandy banks, and along roadsides.



2. Dropseed Grass - Sporobolus neglectus Nash

Annual, forming loose, leafy tufts or clumps; stems erect or spreading to somewhat decumbent near the base, 10-50(75) cm tall; sheaths flattened to somewhat flattened at the base of the plant, upper sheaths somewhat flattened to round, open, inflated, frequently separating and diverging from the stem, smooth or the lower ones somewhat short-hairy, with a few long hairs near the top; blades flat, margins inrolled near the tip, tapering to a long, slender point, 0.5-2.0(4.0) mm long, smooth to somewhat short-hairy on upper surface, margins rough; auricles absent; ligules a fringe of hair about 0.5 mm long.

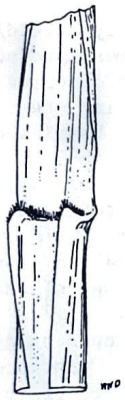
Occurs in dry rocky openings in woods, limestone glades, waste ground, open fields, along railroads. Scattered in the state though apparently most frequent in the northeast, central, and southwestern parts.



3. Triple Awn Grass - Aristida oligantha Michx.

A tufted annual; stems much branched, wiry, erect, 15-50(80) cm tall; sheaths flattened, round on back, smooth, open with overlapping hyaline margins; blades very narrow, 1-2 mm wide, basal blades 10-25 cm long, upper ones shorter, smooth to rough, sometimes sparsely long-hairy above; auricles absent; ligules a fringe of hair 0.2-0.5 mm long.

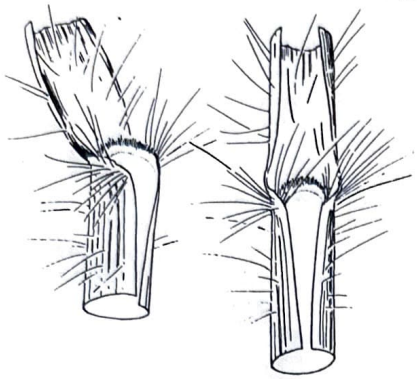
Found generally on dry, sterile soils of fallow fields, open waste ground, eroded clayey slopes, overgrazed pastures, formerly cultivated fields.



4. Poverty Grass - Aristida dichotoma Michx.

Annual, usually tufted; stem much branched from the lower nodes, (5)20-50(80) cm tall, mostly erect; sheath flattened to somewhat flattened, smooth to sometimes sparsely long hairy, open with overlapping hyaline margins, becoming somewhat inflated at maturity; blade narrow, 0.5-1(2) mm wide, becoming inrolled, rough with or without sparse long hair above, smooth below; auricles absent; ligule a minute fringe of hair 0.2-0.4 mm long.

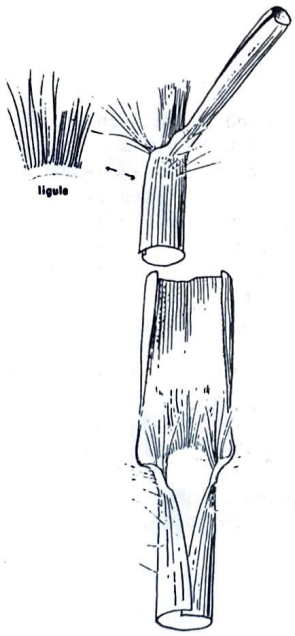
Occurs in rocky prairies, glades, open upland woodland, open ground, waste ground, eroded slopes, and along roadsides and railroads. On dry, cherty, sandy or clayey soils. Found in southern, central, northeastern and eastern Missouri, apparently absent from northwestern and west central counties.



5. Poverty Oatgrass - Danthonia spicata (L.) Beauv.

Perennial, forming dense tufts or clumps of curly leaves; stems stiffly erect, 20-50(80) cm tall; sheaths open, margins not overlapping, round to somewhat flattened, smooth or long-hairy, frequently with tufts of hair at the top; blades 1-3 mm wide, smooth to long-hairy, usually with the margins rolled inward, becoming curled when old; auricles absent; ligules a fringe of stiff hair 0.2-1.5 mm long, truncate.

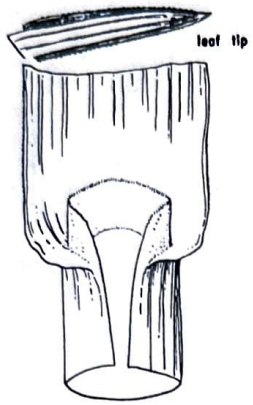
Occurs in dry soils of upland woods, wooded ridges, glades, prairies. Apparently absent from extreme southeastern part of the state and the west central and northwestern counties.



6. Bermuda Grass - Cynodon dactylon (L.) Pers.

Perennial, with extensively spreading tough stolons and stout rhizomes, producing thick mats; stems weak, mostly creeping on the ground, only the flower-producing stems erect and leafy, 10-25(50) cm tall; basal sheaths flattened, upper ones rounded, smooth, open, with overlapping margins, tufts of hair on collar margins; blades smooth to sparsely short- to long-hairy above and below, flat or folded, 2-3(4) mm wide, 3-8(14) cm long; auricles absent; ligules a fringe of hair fused at the base, 0.2-0.5 mm long.

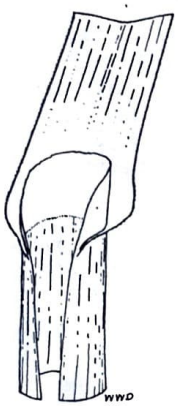
Found in lawns, gardens, open sandy waste ground, and cultivated fields. Most common in the southern counties. Absent or of infrequent occurrence in the counties north of the Missouri River.



7. Canada Bluegrass - Poa compressa L.

Perennial with slender creeping rhizomes, stems erect to spreading, often rooting at the lower nodes and forming loose sod, 20-70(80) cm tall, at least the lower part strongly flattened and two-edged; sheaths, at least the lower ones, strongly flattened, keeled, open to near the base, smooth, margins smooth and hyaline, not overlapping; blades flat to folded, with a prow-like tip, smooth, (1)2-3 mm wide, along with rest of the plant glaucus, and appearing bluish-green; auricles absent; ligules membranous, 1-1.5(3) mm long, truncate or rounded, the margin often somewhat ragged.

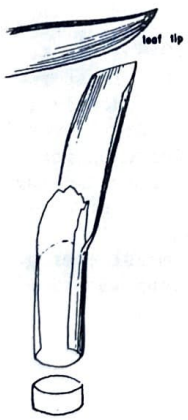
Occurs in open fields, pastures, waste ground, prairie meadows, grazed open woodland, along roadsides, usually in relatively dry areas.



8. Kentucky Bluegrass - Poa pratensis L.

Perennial with slender rhizomes forming dense sods; stems (2)3-6.5(10) cm tall, round to slightly compressed; sheaths only slightly compressed, smooth, open about one-half their length, with thin usually overlapping margins; blades smooth, flat or folded, (1)1.5-3(4) mm wide with a prow-like tip; auricles absent; ligules membranous, 0.5-1.7(2.5) mm long, truncate, with smooth margin.

Occurs in fields, pastures, lawns, meadows, waste ground, roadsides.



9. Annual Bluegrass - Poa annua L.

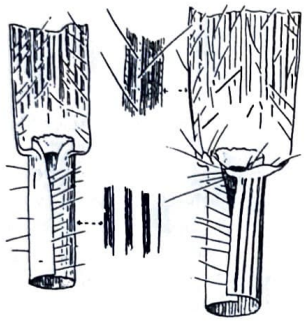
Annual or winter annual, erect and tufted or frequently spreading, sometimes rooting at the lower nodes and forming mats; stems flattened (4)15-30(50) cm tall; sheaths flattened, smooth, open about one-half their length, with thin usually overlapping margins; blades flat, 2-3 mm wide, smooth, with a prow-like tip; auricles absent; ligules membranous, 1-2(3) mm long, rounded to acute.

Occurs generally in moist locations in lawns, gardens, pastures, waste ground, cultivated fields, disturbed areas in woodlands. Apparently more common in the southern part of the state, scattered in the northern part.

10. Hairgrass - Agrostis hiemalis (Walt.) B.S.P.

Perennial, forming slight to dense tufts, rhizomes absent; stem slender, erect, (10)20-80(100) cm tall; sheath round, smooth, open, with overlapping hyaline margins; blade narrow, mostly 1-2.5(3) mm wide, flat to inrolled, smooth to rough on both surfaces; auricles absent; ligules membranous, (0.5)1-3(4) mm long, the margin cut, rounded to acute.

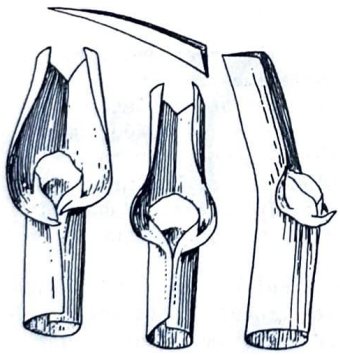
Occurs in prairies, meadows, old fields, and along roadsides.



11. Goatgrass - Aegilops cylindrica Host

Annual, tufted from a leafy base; stems erect, 30-60(70) cm tall; sheaths round, smooth to somewhat hairy, open with thin, hyaline overlapping margins which may or may not be somewhat hairy; blades (1)2-4(6) mm wide, smooth to somewhat hairy; auricles present, small; ligules membranous, 0.2-0.5(0.8) mm long, truncate, with ragged margin.

Occurs in open fields, waste ground, along roadsides and railroads. Scattered over the state.



12. Perennial Ryegrass - Lolium perenne L.

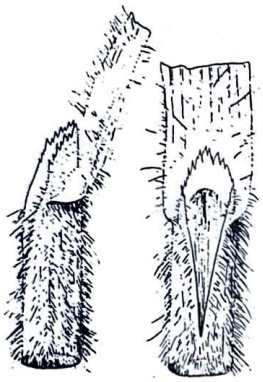
Short-lived perennial lacking rhizomes or stolons; stems erect, 25-70(90) cm tall; sheaths smooth, flattened to almost round, open, with thin hyaline margins; blades 1-3(4) mm wide, smooth, dark green, lower leaves forming tufts; auricles well developed on most leaves, up to 2.0 mm long or sometimes lacking; ligules membranous, entire or may be toothed, rounded to acute, 0.5-1.5 mm long.

Occurs in moderately moist open ground in fields and waste ground along roadsides. Scattered throughout the state.

13. Porcupine Grass - Stipa spartea Trin.

Perennial, forming loose tufts or clumps; stems erect, 50-100(120) cm tall; sheaths near the base of the plant somewhat flattened to round, upper ones round, smooth, open, with overlapping hyaline margins; blades 2-5 mm wide, flat, margins becoming inrolled upon drying, rough and usually short hairy above, smooth on lower surface; auricles absent; ligules membranous, those of the upper leaves 4-6 mm long.

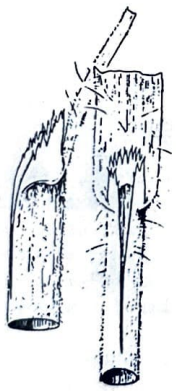
Occurs in dry or rocky prairies, rocky slopes, along roadsides and railroads. Absent from the south central, east central, and southeastern parts of the state.



14. Japanese Chess - Bromus japonicus Thunb.

Annual; stems slender, weak, (20)30-60(70) cm tall; sheaths, at least the lowermost, round, typically covered with spreading, downward pointing long, soft, straight hairs, sheath closed to near top; blades flat, 3-6(7) mm wide, usually covered with soft, white hairs; auricles absent; ligules membranous, with a ragged margin, 0.8-1.5 mm long, frequently covered with short hair.

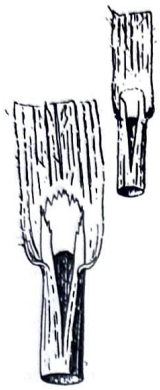
Found in open fields, waste ground, grain fields, and along roadsides.



15. Downy Chess - Bromus tectorum L.

Annual forming small tufts; stems erect, 10-50(70) cm tall; sheaths round, covered with dense relatively short, soft to somewhat bristly hair, closed to near top; blades flat, 2-3.5(7.5) mm wide, covered with soft to somewhat bristly hair; auricles absent; ligules membranous, mostly 1.5-3(4) mm long with a ragged margin.

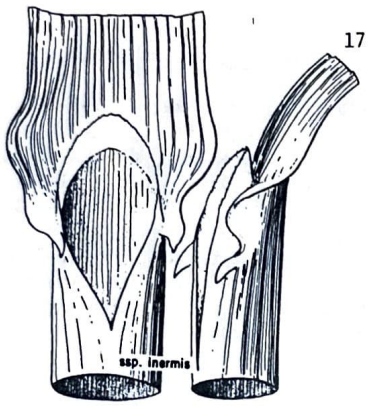
Found in overgrazed pastures, waste ground, open fields, and along roadsides.



16. Cheat or Chess - Bromus secalinus L.

Annual, stems relatively thick, 30-100 cm tall; sheaths round, mostly smooth, but sometimes sparsely hairy, closed to near top; blades flat (2)3-9 mm wide, smooth to short-hairy above and below; auricles absent; ligules membranous, (1.2)1.5-3(4) mm long with a ragged margin, surface smooth or covered with short hair.

Found in grain fields, waste ground, open fields, and along roadsides.



17. Smooth Brome - Bromus inermis Leyss

Perennial, sod-forming by means of rhizomes; stems erect, few, 45-100(150) cm tall; sheaths round, smooth or sometimes short-hairy, closed to near top; blades flat, mostly 5-15 mm wide, smooth above and below, rarely short-hairy, rough on the margins and veins; auricles generally absent, if present 0.5 mm long or shorter; ligules 0.5-1.0(1.5) mm long, truncate to rounded, with a somewhat ragged, hairy margin.

Occurs in fields, waste ground, meadows, and along roadsides. Most common in the northern counties.

18. Wild Barley - Hordeum jubatum L.

Tufted perennial; stems erect, 25-50(75) cm tall; sheaths distinctly to somewhat flattened, smooth or with short hair, open, with overlapping thin, hyaline margins; blades flat, rough or short-hairy above and below, 2-5(6) mm wide; auricles absent; ligules membranous, truncate, 0.2-0.6 mm long.

Occurs along roadsides, in open fields, pastures, and waste ground. Most common in the northern and western counties.

19. Wirestem Muhly - Muhlenbergia frondosa (Poir.) Fern.

Perennial with scaly, creeping rhizomes, 2-3 mm thick; stems erect, but frequently becoming decumbent, and sprawling, sparsely branched, 50-100 cm long, with many nodes and short, smooth, internodes; sheaths somewhat round to distinctly flattened, smooth, open, with overlapping margins; blades flat (1)2-6(8) mm wide, smooth to rough above and below, margins rough; auricles absent; ligules membranous with a ragged to hairy margin, 0.8-1.0(1.4) mm long.

Found on moist ground, along roadsides, occasionally waste ground, and cultivated fields, but not confined to these habitats.

20. Goosegrass - Eleusine indica (L.) Gaertn.

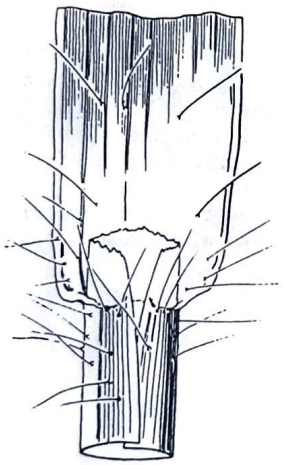
Tufted annual; stems prostrate to erect, branching near base, tough, 10-30(60) cm tall; sheaths strongly flattened, keeled, basal ones pale green or whitish toward base, smooth with upper margins and throat sometimes with sparse hairs 2-6 mm long; blades flat or folded (2)3-5(8) mm wide, sparsely long-hairy above near base, otherwise smooth above and below, margins rough; auricles absent; ligules membranous 0.3-1.2 mm long, truncate, margin very finely cut or fringed with short hair.

Occurs in lawns, gardens, cultivated fields, pastures, waste ground, and along roadsides.

21. Broomsedge - Andropogon virginicus L.

Perennial forming small tufts or clumps; stems stiff, erect, branching from the middle or upper nodes, 50-100 cm tall; sheaths flattened and keeled, especially those at base of plant, smooth to somewhat short-hairy; blades frequently folded, 3-5 mm wide, usually much narrower than sheaths, smooth to somewhat short-hairy; auricles absent; ligules membranous, yellow-brown, stiff, with a fringe of whitish, short hair on the margin, 0.4-0.8 mm long.

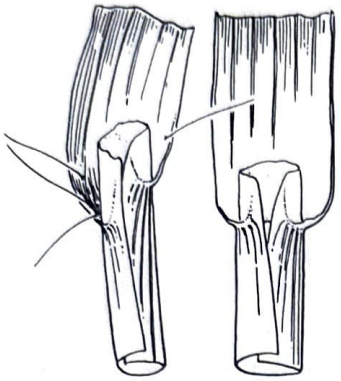
Occurs in prairies, fallow fields, abandoned fields, overgrazed pastures, glades, and along railroads. Most common in counties of southern and central Missouri, scattered in northern part of the state.



22. Large Crabgrass - Digitaria sanguinalis (L.) Scop.

Annual; stems weak, erect to decumbent, sprawling, often rooting at the lower nodes, branching from the base, 30-75(120) cm long; sheaths flattened, keeled, open with overlapping hyaline margins, covered with soft hair; blades flat, soft, 5-10 mm wide, both surfaces covered with soft hair, with a few stiffish, white hairs to 6.0 mm long at the base; auricles absent; ligules membranous, 0.5-1.5(2) mm long, truncate to rounded with a ragged margin.

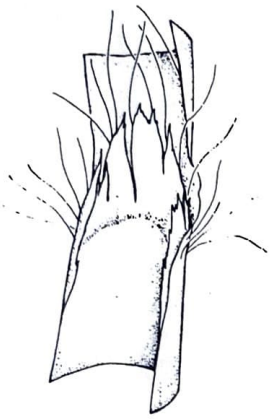
Occurs in lawns, gardens, open ground, waste ground, cultivated fields, margins of ponds, along roadsides, and railroads.



23. Small Crabgrass - Digitaria Ischaemum (Schreb.) Muhl.

Annual; stems weak, erect to decumbent, sprawling, often rooting at the lower nodes, much branched below, (2)5-30(80) cm long; sheaths flattened, keeled, open with overlapping hyaline margins, smooth to slightly hairy at top; blades (2)3-6 mm wide, smooth to slightly rough, sometimes slightly hairy near collar; auricles absent; ligules membranous, truncate, 1.0-2.0 mm long.

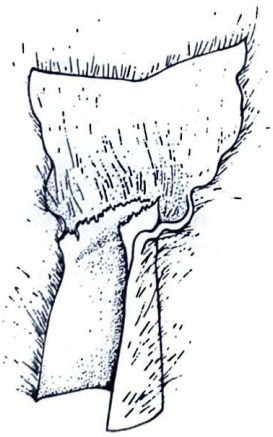
Occurs in gardens, lawns, moist low ground of cultivated fields, pastures, waste ground, woodlands and roadsides.



24. Smooth Paspalum - Paspalum laeve Michx.

Tufted perennial; stems erect, 40-100 cm tall; sheaths flattened to somewhat flattened, keeled, open, smooth to hairy, with overlapping hyaline margins occasionally hairy; blades flat, 3-10(12) mm wide, smooth to hairy; auricles absent; ligules membranous, truncate to acute, 1.0-2.5 mm long.

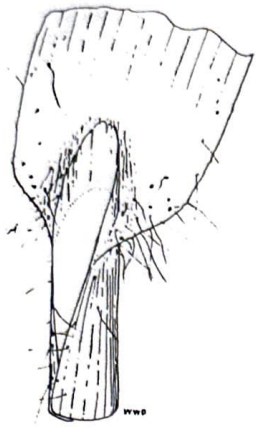
Occurs in moist areas in upland prairies, open fields, woodlands, along ditches, borders of ponds, streams, and roadsides. Central and southern counties.



25. Beadgrass - Paspalum ciliatifolium Michx.

Perennial, somewhat tufted from knotty bases; stems several to many, erect to somewhat spreading, 40-100 cm tall; sheaths flattened, open, smooth to variously hairy, often reddish; blades flat, rather soft to somewhat firm, (3)6-15(20) mm wide, surfaces smooth, or more generally in Missouri, covered with long hairs, with long, silvery hairs just above or behind the ligule, margins usually hairy; auricles absent; ligules membranous, about 1.0 mm long, truncate to slightly rounded, with a ragged margin.

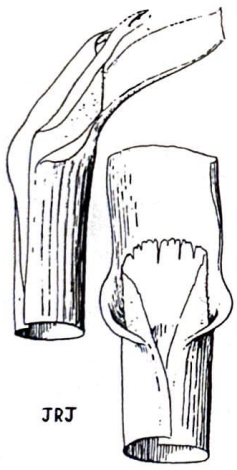
Occurs in prairies, pastures, grazed fields, dry open woods, borders of woods, along roadsides, and railroads.



26. Paspalum or Beadgrass - Paspalum pubiflorum Rupr. var. glabrum Vasey

Loosely tufted, coarse, robust perennial; stems decumbent, rooting at the lower nodes, somewhat flattened thus oval in cross section, the nodes frequently brownish or purplish, 40-80(100) cm tall; sheaths flattened, keeled, open, smooth to somewhat hairy, sparsely long hairy along the thin margins; blades flat, soft (6)8-14(20) mm wide, smooth or sparsely long hairy at the base with a ring of somewhat shorter silvery white hairs behind the ligule, margins somewhat hairy; auricles absent; ligules membranous, often brownish, acute, (1.7)2.0-2.5 mm long, with a toothed or ragged margin.

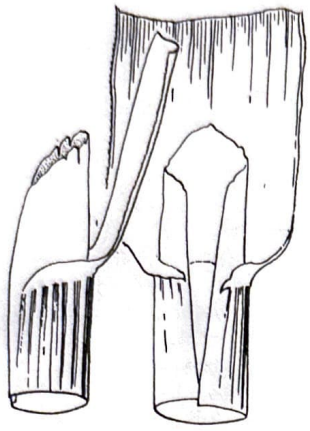
Occurs in moist, open fields, meadows, sandy ditches, roadsides, bottomland woods, and along railroads. Found in the counties of central and southern Missouri.



27. Orchard Grass - Dactylis glomerata L.

Perennial, forming large, dense, leafy tufts or clumps; stems glaucus, erect, 50-100 (120) cm tall; sheaths flattened, keeled, open, smooth to rough; blades smooth to rough, flat or somewhat folded, (2)4-6(10) mm wide; auricles absent; ligules 4-8 mm long, membranous, rounded to pointed, with thin, whitish margin, cut or split.

Occurs in fields, roadsides, waste ground, field borders, and fence rows.



28. Timothy - Phleum pratense L.

Perennial, forming tufts or clumps; stems with somewhat bulbous bases, erect to somewhat decumbent below, smooth, except rough immediately below the inflorescence, 50-100 cm tall; sheaths smooth, open, round to somewhat flattened, rounded on the back; blades flat, 4-10 mm wide, with rough margins; auricles absent or less frequently with small auricles; ligules membranous (1.5)2-3 (5) mm long, rounded, margin entire or sometimes cut.

Occurs in pastures, waste ground, open fields, and along roadsides.

29. Field Foxtail - Alopecurus carolinianus Walt.

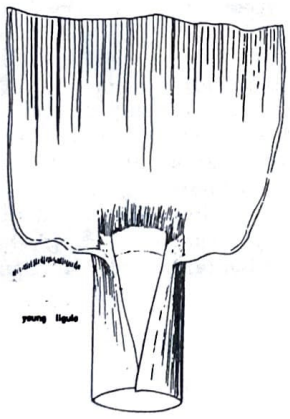
Tufted annual; stems erect to somewhat decumbent at the base, 10-50(60) cm tall; sheaths round, smooth, inflated or enlarged, open, with overlapping hyaline margins; blades flat, (1)2-5 mm wide, upper surface slightly rough, lower surface smooth; auricles absent; ligules membranous, 2-3(5) mm long tapering gradually to a pointed or rounded, sometimes ragged tip.

Occurs in fallow fields, cultivated fields, meadows, moist areas in waste ground, glades, along pond and slough borders, and ditchbanks.

30. Salt-Meadow Grass - Leptochloa fascicularis (Lam.) Gray
Alternate name - (Diplachne) fascicularis (Lam.) Beauv.

Loosely tufted annual; stems 10-40(100) cm tall, densely branching from near the base, erect to decumbent; sheaths open, at least the basal ones somewhat flattened, somewhat inflated below, tapering above, sometimes separating and diverging from the stem, keeled; blades flat, the margins becoming inrolled, 1.5-4.0(5.5) mm, smooth to somewhat rough above and below; auricles absent; ligules membranous, (2)5-7 mm long, narrow, acute to rounded, margin smooth or ragged.

Occurs in wet soils of mud flats, borders of ponds, along streams, in cultivated fields of lowlands, along roadsides. Mostly in western and central parts of the state, scattered in eastern part.



31. Johnsongrass - Sorghum halapense (L.) Pers.

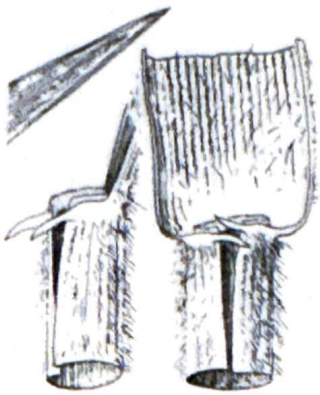
Coarse, robust perennial forming large clumps, spreading by thick, scaly, whitish to brownish rhizomes; stems stout, erect, sometimes branched, (50)100-200 cm tall; sheaths round to slightly flattened, smooth, open, with overlapping hyaline margins; blades elongate, flat, smooth to somewhat short-hairy near the base, (4)10-20(25) mm wide, the pale green to whitish midvein conspicuous; auricles absent; ligules membranous with a dense fringe of hairs approximately one-third the total length of the ligule, truncate, (1.5)3-5(6) mm long.

Occurs along moist roadsides, on ditch-banks, in cultivated fields, waste ground, open fields, along railroads, and in low meadows. Mainly in the southern and central counties, scattered in the northern part of the state.

32. Oats - Avena sativa L.

Relatively coarse, stout tufted annual; stem erect, (25)40-80(120) cm tall; sheaths round, smooth, with overlapping hyaline margins; blades smooth to slightly rough with rough margins, (4)5-15(17) mm wide; auricles absent; ligules membranous, blunt, 2-5.5 mm long, finely toothed.

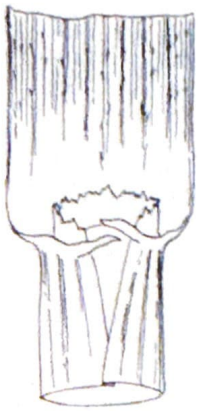
Commonly cultivated plant, but occurs in waste ground, feed lots, along roadsides, and railroads.



33. Quackgrass - Agropyron repens (L.) Beauv.

Perennial with extensively spreading, long, white to yellowish rhizomes; stems erect, (30)50-100(120) cm tall; sheaths round to somewhat flattened, smooth or with the lowermost soft, short hairy, may be green or glaucus; blades flat, thin, (2)3-6(14) mm wide, upper surface smooth to rough, with or without sparse, short hairs, lower surface smooth or short-hairy; auricles present, small, often narrow; ligules membranous, mostly 0.5(1.0) mm long, with finely cut margins.

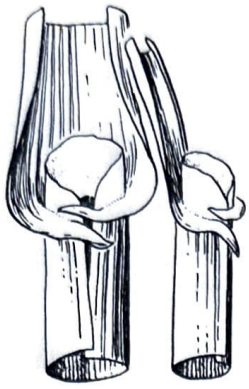
Occurs in waste ground, open fields, fence rows, thickets, ditchbanks, gardens, and pastures. Scattered throughout the state.



34. Rye - Secale cereale L.

Annual or short-lived perennial; stems erect, 60-125 cm tall; sheaths round, smooth, open, with overlapping hyaline margins, usually glaucus; blades flat, 8-20 mm wide, rough above, margins rough; auricles, when present, small to 1.0 mm long; ligules membranous, 1.0-1.5 mm long, margin may be entire or with a fringe of minute hairs.

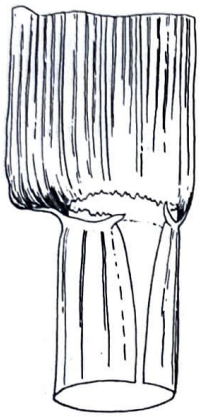
Commonly cultivated plant, but occurs also along roadsides, railroads, and waste ground. Scattered throughout the state.



35. Italian Ryegrass - Lolium multiflorum Lam.

Annual or short-lived perennial; stems erect, 50-100 cm tall; sheaths round, smooth, open, with overlapping hyaline margins; blades flat or sometimes with the margins slightly inrolled, (2)3-7(10) mm wide, smooth to somewhat rough on the upper surface, smooth, glossy below, margins smooth; auricles present, small to well developed, to 1.5(2.0) mm long; ligule membranous, truncate to rounded, 0.5-1.5(2.0) mm long.

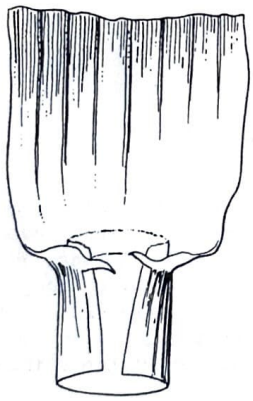
Occurs in moderately moist open ground, and waste ground. Scattered over the state.



36. Wheat - Triticum aestivum L.

Relatively coarse annual or winter annual; stems erect 50-100(120) cm tall, branching at base; sheaths round, smooth, open, with overlapping hyaline margins; blades flat, (2)7-11(20) mm wide, smooth or rough above, smooth below; auricles present, small to prominent; ligules membranous, 0.5-1.5(2.0) mm long, truncate to rounded, the margin entire or cut.

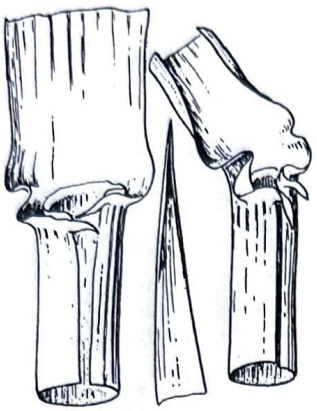
Commonly cultivated plant, but occasionally also found along roadsides, railroads, waste ground, where it does not persist. Scattered in the state.



37. Virginia Wild Rye - Elymus virginicus L.

Tufted perennial; stems erect, (50)60-100 (120) cm tall; sheaths round, smooth, open with overlapping hyaline margins, which may or may not be hairy; blades rough on both sides, green or glaucus, (3)5-15 mm wide; auricles sometimes absent, or present, and well developed to 1.0 mm long; ligules membranous, 0.3-1.0 mm long, truncate, smooth or with a fringe of minute hairs.

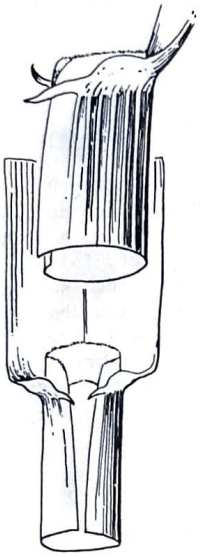
Occurs in bottomlands in woods, banks of streams, also prairies, open fields, rocky bluffs, rocky limestone glades, and along roadsides.



38. Meadow Fescue - Festuca elatior L.
Alternate name - Festuca (pratensis) Huds.

Perennial with short rhizomes, forming loose to dense tufts; stems erect, mostly 60-120 cm tall; sheaths round to somewhat flattened, open, smooth; blades flat, smooth to somewhat rough above, 3-5(7) mm wide; auricles small to well developed, sometimes on only one side; ligules membranous, 0.2(1.0) mm long, with smooth or entire margin.

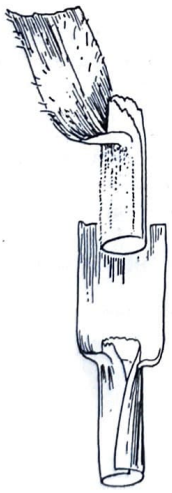
Occurs in waste ground, open fields and along roadsides.



39. Canada Wild Rye - Elymus canadensis L.

Coarse, stout, tufted perennial; stems erect, 80-150 cm tall; sheaths round, smooth or sometimes with soft or stiff short hair, open, with overlapping hyaline margins; blades flat, smooth to somewhat rough on the upper surface, (5)10-20 mm wide, along with sheath green or glaucus and appearing bluish-green; auricles conspicuous, 1-2 mm long, often clasping the stem; ligules membranous 0.2-1.5(2.0) mm long with a fring of fine, short hair.

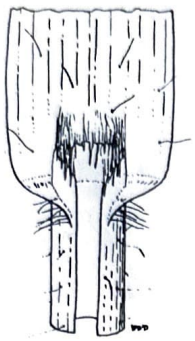
Occurs in prairies, rocky open woods, rocky slopes of bluffs, waste ground, along stream banks, and roadsides. Most common in northern, central, and southwestern parts of the state.



40. Little Barley - Hordeum pusillum Nutt.

Tufted annual; stems erect mostly (10)15-40 cm tall; sheaths smooth or with short spreading hairs, round, open with thin hyaline margins; blades flat, smooth or somewhat rough, 2-5 mm wide; auricles absent; ligules membranous, truncate to slightly rounded, about 0.5 mm long.

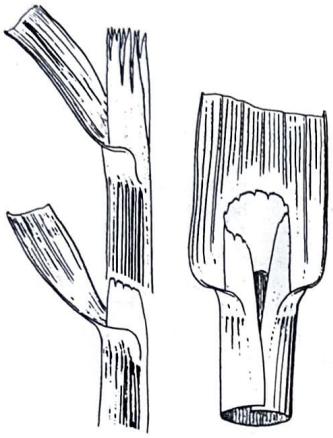
Occurs in waste ground, cultivated ground, along roadsides, railroads, and open ground on dry soils.



41. Red Sprangletop - Leptochloa filiformis (Lam.) Beauv.

Tufted annual; stems erect, usually branched from the base, 30-80(100) cm tall; sheaths, at least the basal ones, somewhat flattened, sparsely long-hairy at least near the top and near margins, open; blades flat, thin, soft, 4-10 mm wide, upper surface with a few scattered long hairs, especially near the base, lower surface smooth; auricles absent; ligules membranous, very thin, 0.5-2.0 mm long, finely and deeply cut at the margin with hair-like fringe.

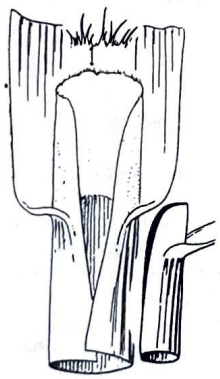
Occurs along alluvial banks, mud flats, in open fields, cultivated fields of the larger river lowlands. Mainly in west central, central, and eastern parts of the state.



42. Redtop - Agrostis stolonifera var. major (Gaud.) Farw.

Sod-forming perennial spreading by means of rhizomes or stolons; stems erect to decumbent near base (30)40-100(130) cm tall; sheaths round, open, smooth; blades flat, folded, or margins inrolled, 3-5(10) mm wide, surfaces smooth to somewhat rough; auricles absent; ligules membranous, 3-4 mm long or longer, truncate to rounded, cut, with a fringe of short, fine hairs.

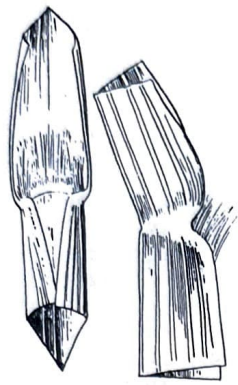
Occurs in waste ground, open fields, low places in meadows, prairies, ditchbanks, along streams, roadsides, and in lawns.



43. Meadow Foxtail - Alopecurus pratensis L.

Somewhat stout perennial with creeping rhizomes, forming loose tufts; stems erect to slightly decumbent at the base, sometimes rooting at the lower nodes, (25)40-80(100) cm tall; sheaths round, open, with overlapping hyaline margins, smooth; blades flat, 3-6(10) mm wide, somewhat rough above, smooth to somewhat rough below, margins rough; auricles absent; ligules membranous, (1.5)2.0-3.0(5.0) mm long, truncate to slightly rounded, fringed with tiny hairs, or smooth.

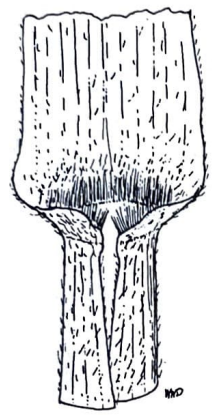
Occurs in open fields, and meadows. Of limited occurrence in Missouri.



44. Field Sandbur - Cenchrus longispinus (Hack.) Fern.

Coarse or stout annual forming loose tufts, or often prostrate, spreading and forming mats; stems decumbent, branching, and spreading from the base, sometimes rooting at the nodes, 10-40(90) cm long; sheaths flattened, keeled, somewhat inflated, smooth, the overlapping margins thin and hyaline, sometimes hairy; collar region sometimes with hairy margins; blades 3-5(8) mm wide, flat to folded, smooth to rough above; auricles absent; ligules a dense fringe of hairs, 0.5-1.0(1.5) mm long.

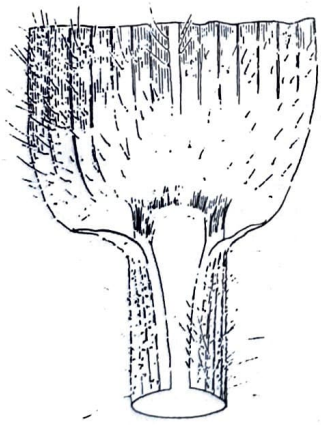
Occurs in waste ground, open fields, cultivated fields, along roadsides, railroads, especially on sandy soils.



45. Prairie Cupgrass - Eriochloa contracta Hitchc.

Tufted annual; stems branching, somewhat decumbent near the base and rooting at the lower nodes, mostly 30-70(100) cm tall; sheaths round to oval, covered with short hair, margins fringed with fine short hair; blades thin, flat, 3-7(9) mm wide, 7-12 cm long, both surfaces covered with short, soft hair; auricles absent; ligules a dense fringe of white hair about 0.5 mm long.

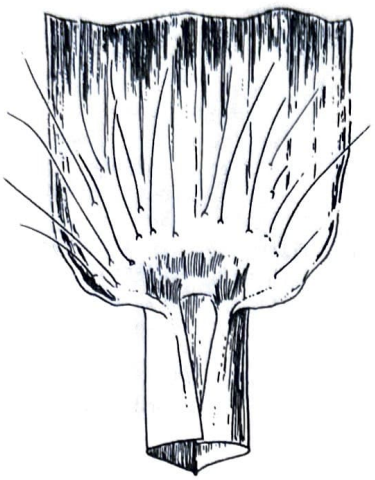
Occurs in lowland open and cultivated fields, waste ground, and in creek areas. In central and eastern Missouri in counties bordering the Missouri and Mississippi Rivers.



46. Witchgrass - Panicum capillare L.

Tufted annual; stems erect, or decumbent at the base and rooting at the lower nodes, branching near the base, 15-50(100) cm tall; sheaths round, covered with soft to stiffish long hairs, the overlapping margins thin, hyaline and smooth or hairy; blades flat or folded, 4-12(15) mm wide, generally soft hairy above though sometimes nearly smooth; auricles absent; ligules a fringe of hairs 1.0-1.5 mm long.

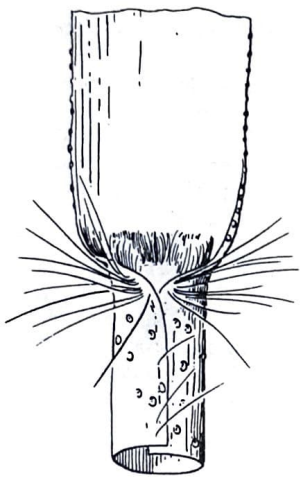
Occurs in meadows, open fields, cultivated fields, waste ground, banks of streams, alluvial soils, along roadsides and railroads.



47. Yellow Foxtail - Setaria glauca (L.) Beauv.

Tufted annual; stems decumbent near base, erect to prostrate above, branching often rooting at the lower nodes; sheaths flattened, at least the lower ones keeled, smooth or sparsely hairy, open, the overlapping margins smooth, thin, hyaline; blades 5-10 mm wide, flat, upper surface smooth to slightly rough, usually with long hairs at the base above, lower surface smooth; auricles absent; ligules a dense fringe of hairs from a very short membranous base, (0.2)1.0-1.2 mm long.

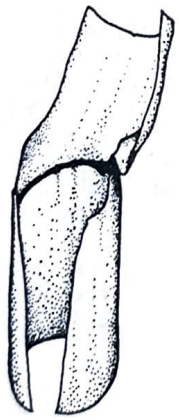
Occurs in open fields, waste ground, cultivated fields, along roadsides, railroads, in pastures, gardens, gravel bars along streams.



48. Stinkgrass - Eragrostis cilianensis (All.) Mosher

Densely tufted annual; stems erect to decumbent, spreading, 10-50(80) cm tall, usually with a ring of tiny glandular pit-like depressions below the nodes, these along with similar glands on other parts giving the plant a somewhat disagreeable odor; sheaths round to slightly flattened, smooth except hairy at the top (throat), usually with glandular pit-like depressions on the keel and near the top, overlapping margins thin, hyaline; blades flat to folded, 2-6(7) mm wide, smooth to slightly rough above, smooth below, lower margins usually with glandular pit-like depressions; auricles absent; ligules a dense row of hairs about 0.5 mm long.

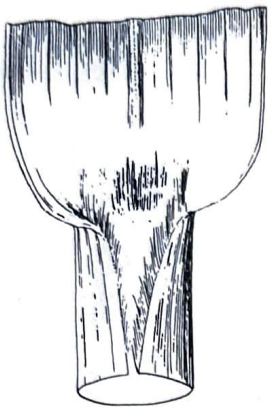
Occurs in waste ground, open fields, cultivated fields, over-grazed pastures, along roadsides, railroads, and in gardens.



49. Purpletop - Tridens flavus (L.) Hitchc.

Tufted perennial; stems erect, mostly 60-150 cm tall; sheaths at base of plant conspicuously flattened and keeled, upper sheaths round, smooth below sometimes short-hairy near the top, overlapping margins smooth; blades flat or becoming inrolled toward the tip, 3-8(10) mm wide, with prominent midvein, smooth to somewhat hairy above, smooth below; auricles absent; ligules a fringe of hair 0.4-0.8 mm long.

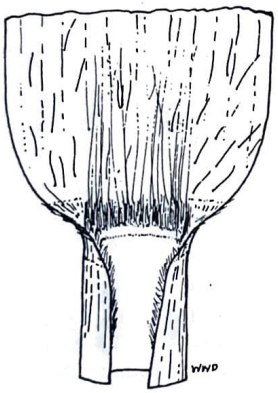
Occurs in open fields, waste ground, edges of woodlands, open woods, and along roadsides.



50. Green Foxtail - Setaria viridis (L.) Beauv.

Tufted annual; stems slender, erect to decumbent, spreading, branched at the base, 10-55(100) cm tall; sheaths round to somewhat flattened and keeled, smooth or with a few long hairs near the top, at least the upper portions of the overlapping margins densely hairy; blades flat or folded (3)4-10(14) mm wide, mostly smooth; auricles absent; ligules a dense fringe of hair 1.0-1.5(2.0) mm long.

Occurs in open fields, waste ground, cultivated fields, along roadsides, railroads, and in pastures. In general, occupies habitats similar to those frequented by yellow foxtail with which it is often associated.

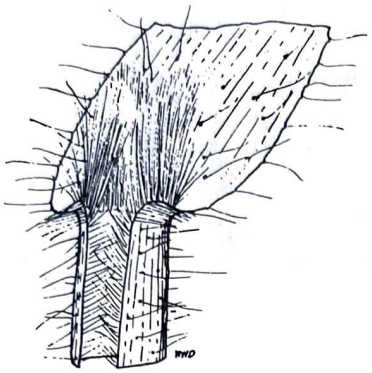


51. Switchgrass - Panicum virgatum L.

Coarse or stout perennial forming extensive tufts or clumps, spreading by scaly frequently branching rhizomes; stems erect, 60-150 (200) cm tall; sheaths smooth except for short hairy upper portion of the overlapping margins; blades flat, 4-10(15) mm wide, smooth to sometimes short-hairy near the base on the upper surface, margins rough; auricles absent; ligules a dense fringe of hair 0.5-1.0 mm long interspersed with fewer longer hairs to 5 mm long, may be fused at the base to form a thin membrane.

Occurs in dry or moist habitats including prairies, glades, rocky banks, sandy flats and gravel bars of rivers, in woodlands, and along railroads. Throughout state except apparently absent in extreme southeast and northwest counties.

52. Woolly Panic Grass - Panicum lanuginosum Ell. var. fasciculatum (Torr.) Fern.



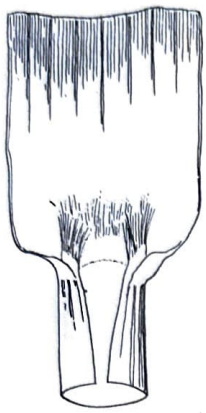
Perennial, forming small to large tufts; stems erect, early season simple, not branched, becoming branched at the upper, lower or all nodes, the stems erect to decumbent and spreading, 25-50(100) cm tall, nodes hairy; sheaths variously hairy from nearly smooth to sparsely-long hairy to densely long-hairy; blades flat to somewhat incurved or spoon-shaped (3)4-8(12) mm wide, variously hairy from densely short-hairy on both sides to smooth or sparsely long-hairy near the base above, those produced later in the season on the branches becoming clustered; auricles absent; ligules a fringe of hair (1.5)3-4(5) mm long.

Occurs in open woods, prairies, meadows, waste ground, pastures, old fields, and along railroads.

53. Giant Foxtail - Setaria Faberii Herrm.

Annual; stems 80-180(200) cm tall, erect to nearly so, frequently bent at the lower nodes; sheaths round to somewhat flattened, smooth to somewhat rough, sometimes short-hairy at the top, the overlapping margins thin and hyaline, smooth or hairy; blades flat, 10-15(20) mm wide, upper surface short-hairy, smooth, keeled below; auricles absent; ligules a fringe of hair 2.0-3.0 mm long.

Occurs in open fields, cultivated fields, waste ground, along roadsides, railroads, and gravel bars along streams.



54. Fall Panicum - Panicum dichotomiflorum Michx.

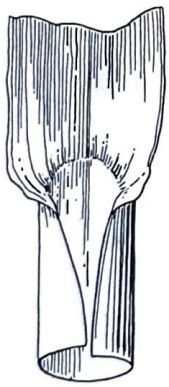
Tufted annual; stems erect or bent at the lower nodes and ascending, or decumbent at the base, relatively straight or strongly zig-zag, frequently branching from the lower nodes; sheaths round, may or may not be inflated, smooth, open, the overlapping margins thin, smooth; blades flat (2)4-15(18) mm wide, smooth or somewhat rough, sometimes sparsely short- to long-hairy above near the base, with a prominent whitish or pale green midvein; auricles absent; ligules a fringe of whitish hair (1.0) 2-3 mm long, fused at the base.

Occurs in waste ground, open and cultivated fields either upland or bottomland, gravel bars along streams, ditchbanks, rocky glades, along roadsides and railroads.

55. Purple Lovegrass - Eragrostis spectabilis (Pursh.) Steud.

Perennial, densely tufted, sometimes with short, stout, pointed rhizomes; stems erect to spreading, (20)30-60(80) cm tall; sheaths round to somewhat flattened, open, with overlapping hyaline margins, smooth or sometimes sparsely long-hairy; collar region with hairy margins, a fringe of long hairs at the juncture of the collar and sheath; blade mostly 3-5(8) mm wide, flat or folded, smooth or nearly so above; auricles absent; ligules a fringe of hairs 3-6(7) mm long.

Occurs in open ground, old fields, fence rows, prairies, along roadsides and railroads.



56. Barnyard Grass - Echinochloa spp.

Coarse annual; stems with many slightly swollen nodes, stiffly erect to decumbent, spreading, sometimes branching at the base, 30-100(150) cm tall; sheaths flattened, smooth; blades 3-12(20) mm wide, smooth; auricles absent; ligules absent.

Occurs in moist, low ground in open fields, waste ground, cultivated fields, gardens, along ditchbanks, streams, ponds, and roadsides.

Glossary

Acute - Sharp, ending in a point, not long-extended, but forming an angle of less than 90°. (Fig. 8)
Annual - Plant which persists for only one year.
Auricles - Earlobe-like projection at the base of the leaf blade. (Figs. 4, 12)
Bud-shoot - A growing, undeveloped leafy shoot as it emerges from the sheath below. (Fig. 13)
Bunchgrass - A grass that grows in tufts. (Fig. 10)
Collar - Area on the outerside of the leaf at the junction of sheath and blade. Usually lighter in color. (Fig. 16)
Cut - Appearing as if torn at the edge or irregularly split (Lacerate). (Fig. 16)
Decumbent - Reclining or lying on the ground, but with end ascending. (Fig. 14)
Entire(margin) - Not toothed, cut or lobed. (Fig. 12)
Fibrous - Composed of, or resembling fibers. (Figs. 10, 14)
Flaccid - Weak and lax, lacking rigidity.
Glaucus - Covered with a whitish, bluish-white, or bluish-green "bloom" or coating that can be rubbed off, e.g., the "bloom" on grapes, and the leaves and stems of iris and milo.
Hyaline - Very thin and translucent or transparent.
Inflated(sheath) - Expanded, distended, or enlarged, thus not closely enclosing the stem. (Fig. 9)
Inflorescence - The flowering portion of a plant, specifically the arrangement of the flowers on the axis.
Inrolled - Involute, the part so rolled that the lower surface is exposed and the upper concealed. (Fig. 17)
Internode - Portion of the stem or other structure between two nodes. (Fig. 5)
Keeled - Provided with a projecting, usually central rib, like the keel of a boat. (Fig. 17)
Ligule - Thin membranous or hairy collar-like projection on the inside of a leaf at the junction of the sheath and blade. (Figs. 2, 3, 6, 7, 8, 12, 16)
Membranous - Like a membrane. (Figs. 2, 3, 6, 8, 12, 16)
Node - The place on the stem where leaves or branches normally originate. Usually swollen and joint-like in the grasses. (Figs. 5, 18)
Perennial - Plants which live for more than two years.
Prow-like - Shaped like the front end of a boat. (Fig. 11)
Rhizome - A horizontal underground stem frequently rooting at the nodes which also bear scales or reduced leaves. It may be thick as in Johnsongrass or relatively slender. Same as rootstock. (Fig. 15, 19)
Sheath - The lower part of a leaf that encloses the stem. It may be open (Fig. 2) or closed (Figs. 1, 3)
Stolon - A modified horizontal above ground creeping stem rooting at the nodes. (Fig. 18)
Three-ranked(leaves) - Leaves in three vertical rows along the stem. (Fig. 1)
Throat - As used here, the two margins of the upper part of the sheath. (Fig. 2)
Toothed - Irregular or jagged margin (Erose). (Fig. 3)
Truncate - Cut straight across, as if cut off. (Fig. 12)
Tuber - A thickened, short portion of a rhizome, usually at the end.
Tufted - Growing in tufts, clusters or clumps of several to many stems. (Fig. 10)
Two-ranked(leaves) - Leaves arranged in two vertical rows along the stem. (Fig. 5)

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